

Messenger®-T&O

A protein used for plant disease management, insect suppression, and plant growth enhancement.

Wettable Dry Granule

ACTIVE INGREDIENT:

Harpin protein:1.0%

OTHER INGREDIENTS:99.0%

Total:100.0%

EPA Reg. No. 69834-4
EPA Est. No. 69834-WA-001



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Net Weight: _____

INDEX:

- 1.0 Precautionary Statements
- 2.0 Directions for Use
- 3.0 Agricultural Use Requirements
- 4.0 Notices to User
- 5.0 Storage and Disposal
- 6.0 Product Information
- 7.0 IPM Use
- 8.0 General Directions for Use
- 9.0 Use Advisories
- 10.0 Application and Mixing Instructions
- 11.0 Application Rates and Specific Plant Instructions
- 12.0 Greenhouse Drench Application
- 13.0 Limited Use License and Patents

ACCEPTED

6 JUL 1 2003

Under the Federal Insecticides,
Fungicides, and Rodenticides Act,
as amended, for the pesticide
registered under
EPA Reg. No. 69834-4

KEEP OUT OF REACH OF CHILDREN

**CAUTION
PRECAUCION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle (If you do not understand the label, find someone to explain it to you.)

IMPORTANT

BEFORE USING THIS PRODUCT, READ THE ENTIRE PRECAUTIONARY STATEMENTS, DIRECTIONS FOR USE, STORAGE AND DISPOSAL INSTRUCTIONS, GENERAL INFORMATION, USE ADVISORIES, AGRICULTURAL USE REQUIREMENTS, AND CONDITIONS OF SALE AND EXCLUSIVE WARRANTY.

IF THE CONDITIONS OF SALE AND EXCLUSIVE WARRANTY ARE NOT ACCEPTABLE, RETURN THIS PRODUCT UNOPENED WITHIN THIRTY (30) DAYS OF PURCHASE TO THE PLACE OF PURCHASE.

1.0 PRECAUTIONARY STATEMENTS

Hazard to Humans & Domestic Animals

CAUTION

1.1 Personal Protective Equipment (PPE):

Applicators and other handlers of this product must wear:

- Long-sleeved shirt and long pants.
- Shoes and socks.

- Particulate dust mask, when mixing.

- 1.2 **User Safety Recommendations:** Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Environmental Hazards

- 1.3 Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

2.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirement specific to your State or Tribe, consult the agency responsible for pesticide regulation.

3.0 AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry interval. The requirements in this box apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water, is:

- Coveralls over long-sleeved shirt and long pants;
- Waterproof gloves; and
- Shoes and socks.

4.0 NOTICES TO USER

4.1 Conditions of Sale and Exclusive Warranty: The

Directions for Use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Plant injury, ineffectiveness of the product, or other unintended consequences may result because of such factors as horticultural practices, use with other products (unless otherwise expressly provided in the Directions for Use of this product), presence of other materials, the manner of use or application, and various environmental conditions, including but not limited to weather conditions and moisture conditions. All of the aforementioned risks are beyond the control of EDEN Bioscience Corporation and all such risks shall be assumed by the Buyer.

- 4.2 **Exclusive Warranties:** EDEN Bioscience Corporation warrants that at the time of the first sale of this product it conforms to the chemical description on the label and under normal conditions is reasonably fit for the purposes referred to in the Directions for Use, subject to inherent risks referred to above. If this product does not perform as warranted above, customer's sole remedy for breach of that warranty shall be replacement of the product or refund of the purchase price paid, at the option of EDEN Bioscience Corporation. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER

WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY.

- 4.3 Limitation of Liability:** To the full extent allowed by law, EDEN Bioscience Corporation excludes for itself and its suppliers any liability, whether based in contract or tort (including negligence), for incidental, consequential, indirect, special, or punitive damages of any kind, or for loss of revenue or profits, loss of business, or plant injury arising out of or in connection with the sale, use, injury, performance, or failure of this product, even if EDEN Bioscience Corporation or its authorized reseller has been advised of the possibility of such damages, and limits its liability to replacement of the product, or a refund of the purchase price paid, at the option of EDEN Bioscience Corporation. This disclaimer of liability for damages will not be affected if any remedy provided herein fails of its essential purpose.
- 4.4 Assumption of Risk:** Buyer and Users of this product assume the risk of any use contrary to the Directions for Use (Sections 2.0 and 8.0) and/or all of the risks inherent in the use of this product as set forth above. EDEN Bioscience Corporation offers this product, and the Buyer and User accept it, subject to the foregoing Conditions of Sale and Exclusive Warranty, which may be varied only by agreement in writing signed by a duly authorized representative of EDEN Bioscience Corporation.
- 4.5 Prompt Notice of Claim:** EDEN Bioscience Corporation must have prompt notice as soon as Buyer or User has reason to believe they may have a claim (not to exceed twenty-one days from date of application) so that an inspection of the affected property and growing plants may be made. Unless Buyer and Users shall promptly notify EDEN of any claims, they shall be barred from obtaining any remedy.
- 4.6 Tank Mixes:** Tank mixing or use of this product with any other product which is not specifically and expressly authorized by the label shall be the exclusive risk of User, Applicator, and/or Application Advisor. Read and follow the entire label of each product to be used in a tank mix with this product.

5.0 STORAGE AND DISPOSAL

- 5.1 General:** Do not contaminate water, food, or feed by storage and disposal. Keep product away from exposure to air, sunlight, moisture, or heat. After opening, use promptly.
- 5.2 Storage:** Store dry and out of direct sunlight. Do not store in temperatures over 110° F for more than seven days.
- 5.3 Disposal:** Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.
- 5.4 Container Disposal:** Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

6.0 PRODUCT INFORMATION

The active ingredient in Messenger-T&O is a protein produced naturally by certain bacteria and other microbes. Messenger-T&O stimulates the plant's pest suppression systems and enhances plant growth. These beneficial effects can result in reduced reliance on traditional chemicals for pest control and greater production. The ability of Messenger-T&O to initiate disease resistance, insect suppression, and to enhance plant growth will vary among plants and conditions. Messenger-T&O has no direct effect on insects or pathogens and the product's efficacy is based on its ability to activate the plant's own defense and growth mechanisms. Plants require 5-7 days to fully induce resistance.

7.0 IPM USE

- 7.1 Start Messenger-T&O IPM Program Early:** Messenger-T&O is recommended for use as part of an IPM (Integrated Pest Management) strategy to combat expected plant

diseases and/or pests. Best results will be obtained when Messenger-T&O is applied as early as possible in the life cycle of the plant followed by repeat applications. Repeat applications should be made at regularly timed intervals or to coincide with key physiological events. Apply other pest control products as needed if greater control is desired.

- 7.2 Preventative Treatment and Required Activation Period:** Messenger-T&O is a preventative treatment and must be applied at least 5-7 days prior to expected disease or pest infestation.
- 7.3 Scouting:** Close scouting and early attention to infestations of pests or pathogens is highly recommended.

8.0 GENERAL DIRECTIONS FOR USE

- 8.1 Sites:** Messenger-T&O may be used for greenhouse, shadehouse, nursery, interiorscapes and field production of all turf and ornamentals listed on this label.
- 8.2 Coverage:** Use spray volume adequate to obtain coverage without run-off. Uniform or full leaf coverage is helpful but is not required. All new foliage should be contacted.
- 8.3 Recommended Rates:** Use the labeled rates for all applications. Increasing the amount of Messenger-T&O by increasing the rate will not improve the product's performance.
- 8.4 Spray Intervals:** Messenger-T&O should be applied approximately every 14 days. Under heavy pest pressure, shortening of spray intervals will not improve and may actually decrease the effectiveness of Messenger-T&O. Under heavy pest pressure, use another pest control product for additional protection.
- 8.5 Tank Mixing:** Messenger-T&O may be tank mixed with other labeled pesticides to enhance control. Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. No dosage rates should be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing. **Before tank-mixing Messenger-T&O with other labeled products, including spreader-stickers, check for tank mix compatibility (see Section 9.4).**

9.0 USE ADVISORIES

- 9.1 Chlorine:** Messenger is sensitive to degradation by chlorine. Avoid using chlorinated water when possible.
- 9.2 pH:** Messenger-T&O may be inactivated by strongly acidic or basic tank mixes. Do not use Messenger-T&O in tank mixes or water below pH 5.0 or above 10.0.
- 9.3 Use Promptly:** Use product within 4 hours of mixing into water. Do not use product from a package that has been opened more than 24 hours.
- 9.4 Tank Mix Compatibility:** Messenger-T&O may be inactivated by exposure to strong oxidizing agents or to materials that are strongly acidic or basic.
- Do not mix this product with pyrophosphates, phosphoric acid, or other strong oxidizers.
 - Do not use Messenger-T&O in tank mixes below pH 5.0 or above 10.0.

Messenger-T&O is a protein, therefore compatibility with inorganic salts, chemicals using clay-based formulas, or other materials in a tank mix cannot be assured under all circumstances.

- 9.5 Fertilization:** Photosynthesis and nutrient uptake are elevated in Messenger-T&O treated plants. Therefore, User must closely monitor plant development and adjust fertilization practices as necessary to maintain the proper developmental stages of plant growth.
- 9.6 Early Maturity:** Plants treated with Messenger-T&O may mature one or more weeks earlier than non-treated plants. User must monitor plants for early maturity and manage plants accordingly.
- 9.7 Rain:** **Do not apply during rain. Reapplication is not necessary if treatments have been applied at least 30 minutes before rain begins.**

10.0 APPLICATION AND MIXING INSTRUCTIONS

- 10.1 Water:** Clean ditch, pond, or well water may be used with Messenger-T&O. Messenger is sensitive to degradation by chlorine (found in many municipal water sources) and certain other chemicals.

10.2 Mixing Instructions: Mix Messenger-T&O as follows:

- Add water to the mix tank and provide gentle agitation.
- Add a non-ionic spreader-sticker (if desired) and other spray material to be tank mixed, if any, to the mix tank. Only material which has been approved for use on growing and harvested plants may be added. Continue agitating for approximately 5 minutes.
- Add the required amount of Messenger. Continue agitation. Apply promptly.

10.3 Application and Water Volume: Messenger-T&O may be applied with conventional ground or aerial equipment with quantities of water sufficient to provide coverage of top of the plant or new foliage. Uniform coverage is not required but may be helpful. The volume of water required per acre will depend on plant development, relative humidity, spray equipment, and local experience. For ground applications, the selection of spray volumes of 25 to 150 gallons of water per acre is recommended. For optimal results, use at least 3 gallons of water per acre by air except in arid areas, where 5 to 10 gallons may be required.

10.4 Spray Drift for Aerial Application: Avoiding spray drift at the application site is the responsibility of the applicator. The interactions of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

10.5 Seed Treatment: Messenger-T&O may be used to treat seeds. Apply 1-15 oz. Messenger-T&O per 60-100 lbs. seed as a pre-plant seed treatment using standard seed treatment equipment. Mix thoroughly and plant. Messenger-T&O may be mixed with some other commercial seed treatments. Use of the resulting mix must be in accordance with the more restrictive label limitations and precautions.

10.6 Application via Sprinkler, Drip, or Chemigation Systems: General Statements: Messenger-T&O may be applied through most sprinkler, drip, or chemigation systems. If you have questions about your system's calibration, you should contact State Extension Service Specialists, equipment manufacturer or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system. A person knowledgeable about the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

System Requirements: The system must contain a functional check valve, vacuum relief valve and low-pressure drain, appropriately located on the irrigation pipeline to prevent water source contamination from back-flow. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. Do not apply when wind-speed favors drift beyond the area intended for treatment.

11.0 APPLICATION RATES AND SPECIFIC PLANT INSTRUCTIONS

Use the tables below to determine the application rates for Messenger-T&O as a foliar spray. Follow specific plant

instructions for application timing and frequency.

11.1 Ornamentals and Turf Application Rates and Specific Plant Instructions

Plant Type	Oz/Acre
Ornamentals such as Fresh Cut Flowers, Bedding Plants and Green Foliage Plants	13-40
Rose	6-27
Trees such as Conifer and Broad-leaf	20-40
Turf	6-27

• ORNAMENTALS

Uses: Messenger-T&O is recommended to boost overall growth and production of greenhouse and field grown ornamentals (cut flowers, bedding, and green foliage plants). For geranium, Messenger-T&O is also recommended to aid in management of diseases such as bacterial leaf blight (*Xanthomonas campestris pv pelargonii*).

Time and Methods of Application: For greenhouse bedding plants: Messenger-T&O may be applied at approximately 14-day intervals as irrigation drenches directly to seeded flats or cuttings. For field-grown plants, Messenger-T&O may be applied as foliar sprays at approximately 14-day intervals once plants have fully leafed out or beginning approximately 7 days after transplant.

• ROSE

Uses: Messenger-T&O is recommended to boost overall growth and production of rose and to aid in management of diseases such as black leaf spot (*Diplocarpon rosae*).

Time and Methods of Application: Messenger-T&O may be applied as foliar sprays beginning 7 days after grafted cuttings are planted and continuing at approximately 14-day intervals.

• TREES (such as conifer and broad-leaf)

Uses: Messenger-T&O is recommended to boost overall growth and production of conifers and to aid in management of diseases such as *Botrytis* gray mold (*Botrytis cinerea*).

Time and Methods of Application: Messenger-T&O may be applied as a pre-plant seed treatment immediately before planting followed by foliar sprays at approximately 14-day intervals beginning after complete emergence.

• TURF

Uses: Messenger-T&O is recommended to boost overall growth and vigor of turf grass and to aid in the management of disease.

Time and Methods of Application: Messenger-T&O may be applied as a seed treatment for overseeded or newly seeded turf followed by foliar sprays at approximately 14-day intervals beginning 14 days after full emergence.

11.2 Grasses Grown for Seed Application Rates and Specific Plant Instructions

Plant Type	Oz/Acre
Grasses Grown for Seed	6-27

• GRASSES GROWN FOR SEED

Uses: Messenger-T&O is recommended to boost overall growth and vigor and to aid in the management of disease in turf grasses grown for seed such as blue grasses, fescues, and rye grasses, and forage grasses grown for seed such as fescues, orchard grasses, timothys, bromes, wheat grasses, and other native species.

Time and Methods of Application: Messenger-T&O may be applied as a seed treatment followed by foliar sprays at approximately 14-day intervals beginning 14 days after full emergence.

11.3 Greenhouse Drench Application

Mix 6-13 oz. Messenger-T&O per 50 gallons of water. Apply solution immediately by traveling boom at a height and speed appropriate to thoroughly drench seedlings. Do not apply

additional irrigation to plants for at least 30 minutes following application.

11.4 Interiorscape Use Application

Messenger-T&O may be used on ornamental plants (such as fresh cut flowers and green foliage plants) as follows:

Drench Application: Use 0.1-1 oz/gal, thoroughly wet pot. Apply at 14-day intervals.

Foliar Application: Use 0.1-1 oz/gal, spray leaf surfaces for adequate coverage avoiding excessive runoff. Apply at 7-14 day intervals.

12.0 LIMITED USE LICENSE AND PATENTS

The contents of this package and/or the use of the contents are covered by U.S. Patent Nos. 5,849,868, 5,859,324, 5,776,889, 5,977,060 and 6,277,814 as well as pending patent applications. The purchase of this package grants the Buyer a license, under these patents and patent applications, to use its contents only for treating plants, plant seeds, and other plant parts as described herein.

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